

CLAIMS

What is claimed is:

- 1        1. A method of transferring video through an interface comprising:  
2                compressing a first portion of a block of coefficients, the block of coefficients  
3                representing a block of pixels;  
4                sending the compressed first portion of coefficients to the interface;  
5                compressing a second portion of the block of coefficients; and  
6                sending the compressed second portion of coefficients to the interface.
- 1        2. The method as claimed in claim 1 wherein a reception device receives and  
2                decompresses the first and second portions of coefficients, combines the  
3                decompressed first portion of coefficients with the decompressed second portion of  
4                coefficients to generate a combined coefficient matrix corresponding with the block  
5                of pixels.
- 1        3. The method as claimed in claim 1 wherein the matrix of coefficients has a  
2                low frequency portion and a high frequency portion, wherein compressing the first  
3                portion of the coefficients comprises compressing the low frequency portion of the  
4                coefficients, and wherein sending the compressed first portion of coefficients sends  
5                the compressed low frequency portion of coefficients to the interface,  
6                and wherein compressing the second portion of the coefficients comprises  
7                compressing the high frequency portion of the coefficients, and wherein sending the  
8                compressed second portion of coefficients comprises sending the compressed high  
9                frequency portion of coefficients.
- 1        4. The method as claimed in claim 1 wherein a video is comprised of a  
2                sequence of frames and wherein each frame of the sequence is comprised of a  
3                plurality of blocks of pixels, and

4           wherein compressing and sending the first portion of coefficients are  
5   performed for each block of pixels of each frame in the sequence prior to performing  
6   compressing and sending the second portion of coefficients.

1           5. The method as claimed in claim 4 further comprising:  
2           repeating compressing and sending the first portion of the coefficients for a set  
3   of initial frames of the sequence; and  
4           performing compressing and sending the second portion of coefficients for  
5   each block of pixels for frames subsequent to receiving a switch mode signal,  
6           wherein the reception device decompresses and decodes the first portion of  
7   coefficients for each frame to match one of the initial frames with a previously sent  
8   frame,  
9           the method further comprising:  
10          receiving the switch mode signal from the reception device; and  
11          switching from compressing and sending the first portion of coefficients to  
12   compressing and sending the second portion of coefficients.

1           6. The method as claimed in claim 1 wherein a reception device receives and  
2   decompresses the first and second portions of coefficients, combines the  
3   decompressed first portion of coefficients with the decompressed second portion of  
4   coefficients to generate a combined coefficient matrix corresponding with the block  
5   of pixels, and generates a bit stream from the combined coefficient matrix.

1           7. The method as claimed in claim 1 wherein the second portion of  
2   coefficients is exclusive of coefficients of the first portion.

1           8. The method as claimed in claim 1 wherein the video is comprised of a  
2   sequence of digital frames and wherein each frame of the sequence is comprised of a  
3   plurality of blocks of pixels, and wherein a transform is performed on each block of  
4   pixels resulting in the matrix of coefficients corresponding with each block of pixels,  
5   the method further comprising:

6 receiving a sequence of analog video frames; and  
7 converting the sequence analog video frames to the sequence of digital video  
8 frames, wherein each pixel is represented by at least one byte.

1 9. The method as claimed in claim 1 wherein the interface is low data rate  
2 interface providing a communication link with a reception device having a data rate  
3 between 1 and 20 Mbps.

1 10. The method as claimed in claim 9 wherein the interface is a universal  
2 serial bus (USB) interface.

1 11. The method as claimed in claim 1 further comprising performing a  
2 transform on the block of pixels resulting in the matrix of coefficients corresponding  
3 with the block of pixels.

1 12. The method as claimed in claim 11 wherein transforming the block of  
2 pixels comprises performing a discrete cosine transform (DCT) on the block of pixels  
3 resulting in a matrix of DCT coefficients corresponding with the block of pixels.

1 13. A method of generating a high quality video bit stream from coefficients  
2 received over an interface, the method comprising:  
3 decompressing a first portion of coefficients;  
4 decompressing a second portion of the coefficients received subsequent to the  
5 first portion; and  
6 combining the first and second portions of coefficients to generate a combined  
7 coefficient matrix corresponding with a block of pixels.

1 14. The method as claimed in claim 13 wherein the block of pixels is  
2 represented by a matrix of coefficients comprised of the first and second portions, the  
3 first portion being compressed prior to being sent over a low data rate interface.

1        15. The method as claimed in claim 13 wherein a video is comprised of a  
2 sequence of frames and wherein each frame of the sequence is comprised of a  
3 plurality of blocks of pixels, each block of pixels being represented by a matrix of  
4 coefficients comprised of the first and second portions,

5            the method further comprising:

6            receiving for a second time the first portion of coefficients for each block of  
7 pixels of initial frames of the sequence;

8            matching one of the initial frames with a previously received frame to identify  
9 a reference frame; and

10            signaling a video capture device to send the second portion of coefficients for  
11 each block of pixels of frames subsequent to the reference frame.

1        16. The method as claimed in claim 15 wherein the first portion of coefficients  
2 is comprised of low frequency coefficients of the matrix and the second portion is  
3 comprised of high frequency coefficients of the matrix, and wherein signaling the  
4 video capture device instructs the video capture device to switch from compressing  
5 and sending the low frequency coefficients of the matrix to compressing and sending  
6 the high frequency coefficients of the matrix.

1        17. The method as claimed in claim 13 wherein a video is comprised of a  
2 sequence of frames and wherein each frame of the sequence is comprised of a  
3 plurality of blocks of pixels, each block of pixels being represented by a matrix of  
4 coefficients comprised of the first and second portions,

5            the method further comprising:

6            receiving the first portion of coefficients for each block of pixels for frames of  
7 the sequence over the interface;

8            storing the first portion of coefficients for each block of pixels for frames of  
9 the sequence; and

10            upon completion of receiving the first portion of coefficients, receiving the  
11 second portion of coefficients for each block of pixels for frames of the sequence.

1           18. The method as claimed in claim 13 wherein a video is comprised of a  
2 sequence of frames and wherein each frame of the sequence is comprised of a  
3 plurality of blocks of pixels, each block of pixels being represented by a matrix of  
4 coefficients,

5           the method further comprising providing an indication to resend the first  
6 portion of coefficients for initial frames of the sequence upon completion of receiving  
7 the first portion of coefficients for each block of pixels of each frame of the sequence.

1           19. The method as claimed in claim 18 wherein the indication comprises  
2 sending a replay signal to a video capture device.

1           20. The method as claimed in claim 18 wherein the indication comprises  
2 displaying a replay signal to instruct a user to replay the video.

1           21. The method as claimed in claim 13 wherein a video is comprised of a  
2 sequence of frames and wherein each frame of the sequence is comprised of a  
3 plurality of blocks of pixels, each block of pixels being represented by a matrix of  
4 coefficients comprised of the first and second portions, the method further  
5 comprising:

6           transforming the combined coefficient matrix for each block of pixels to a bit  
7 stream representing the video; and  
8           storing the bit stream.

1           22. A system for generating a bit stream representing a high quality video  
2 comprising:

3           a serial interface to receive first and second portions of coefficients of a  
4 coefficient matrix;

5           a decompressing element to decompress the first portion of coefficients and to  
6 decompress the second portion of coefficients, the second portion being received  
7 subsequent to the first portion; and

8           a combining element to combine the first and second portions of coefficients  
9    to generate a combined coefficient matrix corresponding with a block of pixels.

1           23. The system as claimed in claim 22 further comprising a processing  
2    element to match an initial frame with a previously received frame and send a signal  
3    to the interface during a vertical blanking interval, the signal requesting a video  
4    capture device to compress and send the second portion of coefficients.

1           24. The system as claimed in claim 22 wherein the processing element  
2    generates the bit stream from the combined coefficient matrix, and the system further  
3    comprising a storage element for storing the bit stream.

1           25. A video capture device comprising:  
2           a compressing element to transform a block of the pixels to a corresponding  
3    matrix of coefficients and compress a first portion of the coefficients;  
4           a serial interface to send the compressed first portion of coefficients over a  
5    serial link; and  
6           a controller to instruct the compressing element to compress a second portion  
7    of the coefficients and cause the compressed second portion of coefficients to be sent  
8    to the serial interface.

1           26. The device as claimed in claim 25 wherein the controller instructs the  
2    compressing element to compress the second portion of the coefficients after the  
3    compressed first portion of coefficients have been sent over a serial link.

1           27. The device as claimed in claim 25 wherein a video is comprised of a  
2    sequence of frames wherein each frame of the sequence is comprised of a plurality of  
3    blocks of pixels, and the compressing element transforms each block of pixels a  
4    matrix of coefficients corresponding with each block of pixels.

1           28. The device as claimed in claim 27 wherein each matrix of coefficients has  
2 a low frequency portion and a high frequency portion, wherein the compressing  
3 element compresses the low frequency portion of the coefficients for each matrix of  
4 coefficients, and the interface sends the compressed low frequency portion of  
5 coefficients for each block of pixels.

1           29. The device as claimed in claim 27 further comprising a decoder element to  
2 receive a sequence of analog video frames and to convert the sequence of analog  
3 video frames to a sequence of digital video frames, wherein each pixel is represented  
4 by at least one byte.

1           30. The device as claimed in claim 25 wherein the serial interface is a  
2 universal serial bus (USB) interface providing a communication link with a reception  
3 device and having a data rate between 1 and 20 Mbps, and wherein the compressor  
4 includes a hardware accelerator to perform a discrete cosine transform (DCT) on the  
5 block of pixels resulting in a matrix of DCT coefficients corresponding with the block  
6 of pixels.